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RETRIV: AN ADDITION TO THE AIR QUALITY DATA HANDLING SYSTEM

Thomas O. Barnwell, et al

Environmental Protection Agency
Athens, Georgia

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An Addition To The

Air Quality Data Handling System

Environmental Protection Agency
Surveillance and Analysis Division
Region IV

ATHENS, GEORGIA

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Springfield VA 22151

October 24, 1972

RETRIV

AN ADDITION TO THE

AIR QUALITY DATA HANDLING SYSTEM

by

Thomas O. Barnwell
Howard A. True
Pollution Control Systems & Analysis
Surveillance & Analysis Division
Region IV, Environmental Protection Agency
College Station Road
Athens, Georgia 30601

October 24, 1972

Introduction

This paper describes a program, RETRIV, written to be used in conjunction with the Air Quality Data Handling (AQDHS) system. When used in conjunction with a catalogued procedure, it is possible to run the statistics program, the report program, the National Aerometric Data Bank (NADB) input program, or combinations of the above with a single set of retrieval control cards. When used alone, RETRIV will purge the AQDHS master file of unwanted data, obtain a listing of site location data from the AQDHS master file, prepare retrieval control cards for the report program, or select data for specialized processing. Sufficient flexibility has been built into the program to make it widely useful.

System Particulars

RETRIV is written in FORTRAN IV (Level G) and was tested on an IBM 370/155. Standard FORTRAN coding was used so that the program would be machine independent. However, the program was designed to be used in conjunction with an IBM catalogued procedure and this paper will discuss the program in this use context. Detailed program flow chart, source listing, and appropriate IBM Job Control language listings are included in the Appendix.

Overview

Control information is read in using a FORTRAN namelist read. A series of logical tests are set up and the retrieval information is

printed back. The program then passes through the AQDHS master file and writes the selected records onto a temporary data set. The program also prepares retrieval control cards for the statistics, report, and NADB input program. An option in the program allows the user to print the identification key of the selected records. Another option in the program allows the specification of return codes which, by use of a catalogued procedure, can be used to control execution of other programs in the AQDHS retrieval series. A count of the records retrieved is also printed. The primary benefit of this concept is that any of programs mentioned above can be executed by a single JCL (Job Control Language) deck.

Program Control Cards

The input control data is read in using a FORTRAN Namelist[1] read. An optional title card may be placed behind the namelist data set. The input data must be in a special form in order to be read using Namelist. The first character in each card to be read must be blank. The second character in the first card of a group of data cards must be an &, immediately followed by INDATA and at least one blank. The data items follow and must be in the form symbolic name = constant or array name =

---

[1] IBM System/360 and System/370 FORTRAN IV Language, IBM Corporation, January 1971, Manual #GC28-6515-8.

TABLE 1

NAMELIST SYMBOLIC NAME	DEFAULT	MAXIMUM VALUES	DESCRIPTION/COMMENTS
PGM	1	1	Desired programs. See Table 2
PRINT	0	1	= 1 if station location key is desired.
OPTION	1	1	= 2 if purge option is desired.
AGENCY	ALL	26	Agency code enclosed in quotes.
PROJ	ALL	10	Project code
STATE	ALL	8	Saroad state code
AREA	ALL	50	Saroad area code
STAR	ALL	50 pairs	State-Area combinations
SITE	ALL	50	Site code
PARAM	ALL	10	Parameter code
METHOD	ALL	10	Method code (used only with parameter code)
TIME	ALL	4	Time code
BD	10 00 00	1	Beginning date (YYMMDD)
ED	99 99 99	1	Ending date (YYMMDD)

TABLE 2

DESCRIPTION OF PGM OPTIONS

VALUE*	PROGRAMS RUN
1	Retrieve only
2	Statistics only
3	Statistics and Report
4	Report only
5	Report and NADB input
6	NADB input only

*corresponds to return code produced by program.

set of constants. Each constant must be followed by a comma. The end of a data group is signaled by &END. The optional title card is placed behind the card containing the &END and the title is punched in card columns 41-80. A summary of symbolic names allowed in the name-list data set is given in Table 1 and a detailed explanation of each follows.

The following three variables are used to control the program RETRIV:

PGM = is used to designate the programs to be run. The value assigned this variable must be an integer between 1 and 6 (See Table 2). If the variable is omitted, or if the value assigned is outside of the range 1-6, a value of 1 is assumed. The value assigned to this variable corresponds to the return code passed by this program at the end of execution.

PRINT = is used to print out the identification key of each record written on the temporary file. This information consists of the Agency, project, state, area, site, parameter, method, time, and date codes on the record. If this information is desired, PRINT = 1, should be specified in the input control deck. If this variable is omitted, or a value other than 1 is specified, the information will not be printed.

OPTION = is used to designate whether records are retrieved or purged. The purge option is selected by entering OPTION = 2, in the control deck. This feature allows purging of the master file without having to read a large number of data cards into the update program. If the variable is omitted, or if the value is other than 2, the retrieve option is exercised by default. Note that the purged data is written onto the system file defined by FORTRAN unit FT07F001.

While the above variables are specific to the control of the program RETRIV, the remaining variables discussed below are used to specify information about the records being retrieved or purged. If a record-specific variable is not specified, the program will not check the master file records for that variable. For instance, if only the PARAM variable is specified, all records associated with the parameter specified will be retrieved (or purged, if OPTION = 2 is specified). Appropriate code designations may be found in the AQDHS and SAROAD manuals.

AGENCY = is unique in that it must be specified as a character rather than a number. Up to 26 agency codes may be assigned to this variable and each must be enclosed in quotes. For example, if agencies A, D and F are desired, the coding would look like:

AGENCY= 'A', 'D', 'F',

PROJ = is associated with the project code and up to 10 may be entered. Leading zeros may be omitted but trailing zeros must be punched. I.E., if projects 05 and 20 are desired, PROJ = 5,20, should be specified in the control deck.

STATE = is used to specify the SAROAD state code. If no states are specified, all will be retrieved. Up to eight states may be specified and would be punched as follows: STATE=10,11, etc.

AREA = is used to specify the SAROAD area codes. Up to 50 area codes may be specified and are entered in the same manner as the state codes. Again, if no area codes are specified, all will be retrieved (subject, of course, to other retrieval limitations).

SITE = is used to specify the SAROAD site codes. Up to 50 may be specified and, if this variable is omitted, all will be retrieved.

Note that record-specific variables are checked individually. For example, if the following control deck were used,

&INDATA STATE=10,11,AREA=860,880,SITE=8,9,&END

the program would read a record and first determine if the state code is 10 or 11. If it is not, the record would be rejected. If it is one of the two specified, then the program would determine if the area code is 860 or 880 and if it is, would then check for a site code of 8 or 9. Therefore, records meeting the following criteria would be retrieved.

STATE	10	10	10	10	11	11	11	11
AREA	860	860	880	880	860	860	880	880
SITE	8	9	8	9	8	9	8	9

STAR = is used to specify state-area combinations. Up to 50 state-area pairs may be specified for this variable. For example, if areas 860 and 880 for state 10 and only area 860 for state 11 are desired, the following should be coded:

STAR= 10, 860, 10, 880, 11, 860,

PARAM = is used to select parameter codes or may be used in conjunction with METHOD= to select parameter-method combinations.

METHOD = is not used unless PARAM= is specified, and, if it is omitted, all methods of a specified parameter will be retrieved. Up to 10 parameters or parameter-method combinations may be specified. The position of the specific method for a parameter must correspond to the

position of that parameter in the PARAM array. For example, the coding for all methods of parameter 11101 and 11102 and method 91 of parameter 11103 may be accomplished as follows:

PARAM= 11101, 11102, 11103, METHOD= ,,91, or as

PARAM= 11103, 11101, 11102, METHOD= 91, or as

PARAM= 11101, 11103, 11102, METHOD= ,91,

TIME = is used to specify individual time codes and up to four may be specified. If no time codes are specified, all will be retrieved.

BD = may be used to specify a beginning date for data. The date must be in the form YYMMDD and all six digits must be specified. A default value of 10 00 00 is assigned if no beginning date is specified. The program rejects data having a date less than the value assigned.

ED = is used to specify an ending date for data. The format for this variable is identical to the beginning date variable. A default value of 99 99 99 is assigned if an ending date is not specified. The program rejects data having a date greater than the value specified. Thus, if data for only one day is desired, both BD and ED should be assigned the same number.

&END must be punched at the end of the retrieval control information.

A title card may be placed in the retrieval control deck. Only one title card is allowed and it must immediately follow the card containing the &END. The title information must be placed in columns 41-80 of the title card.

Summary and Conclusion

Use of the RETRIV program is illustrated in Figures 1 and 2. Figure 1 illustrates the use of RETRIV as a control program to execute the three AQDHS retrieval programs. Appropriate IBM JCL for this concept are shown in Appendix B. Figure 2 illustrates the use of RETRIV to purge the master file of unwanted or unnecessary data or to correct bad data. Other appendices to this paper include the FORTRAN unit assignments for the program, a source listing, and a detailed flow chart.

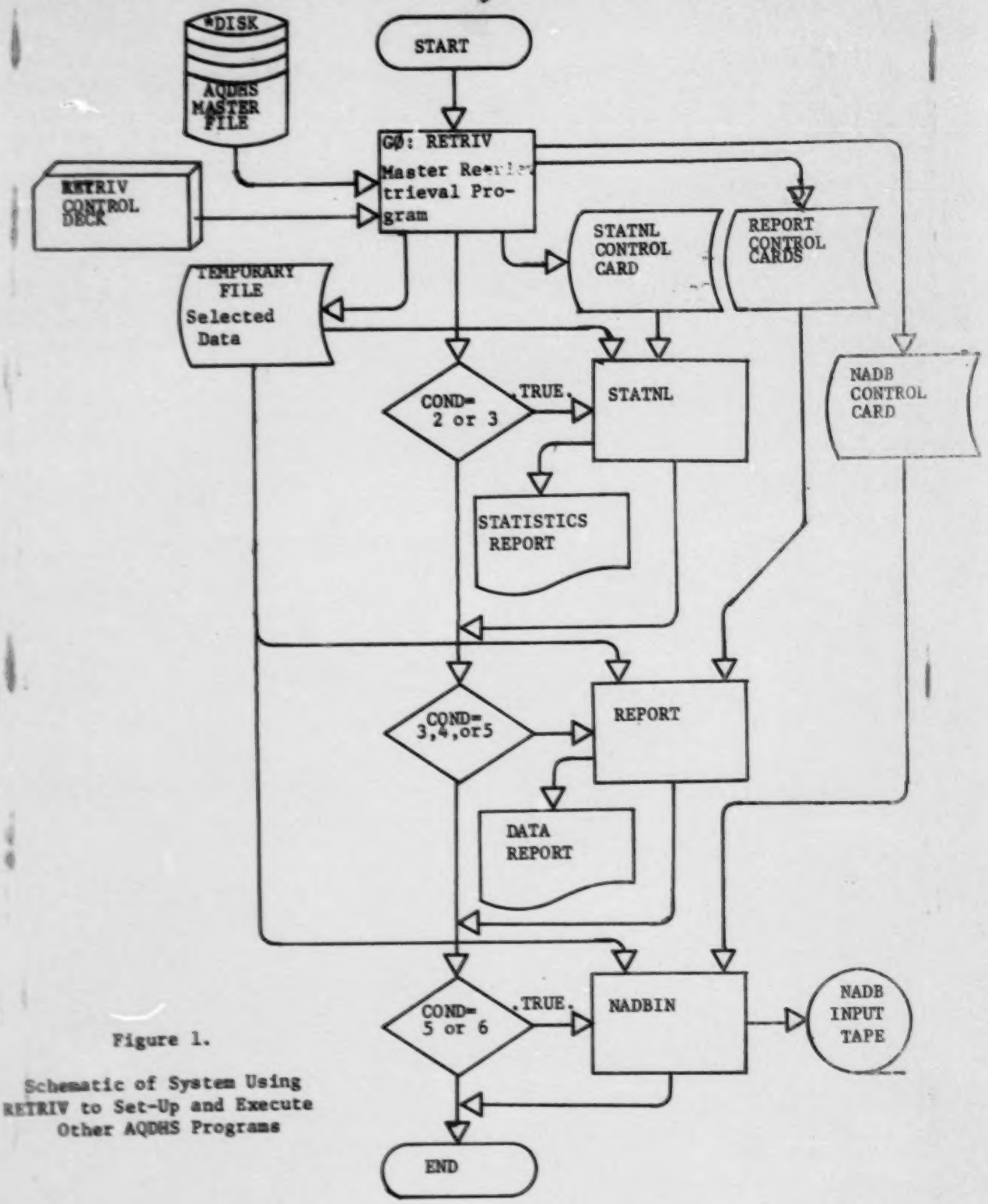


Figure 1.

Schematic of System Using RETRIV to Set-Up and Execute Other AQDHS Programs

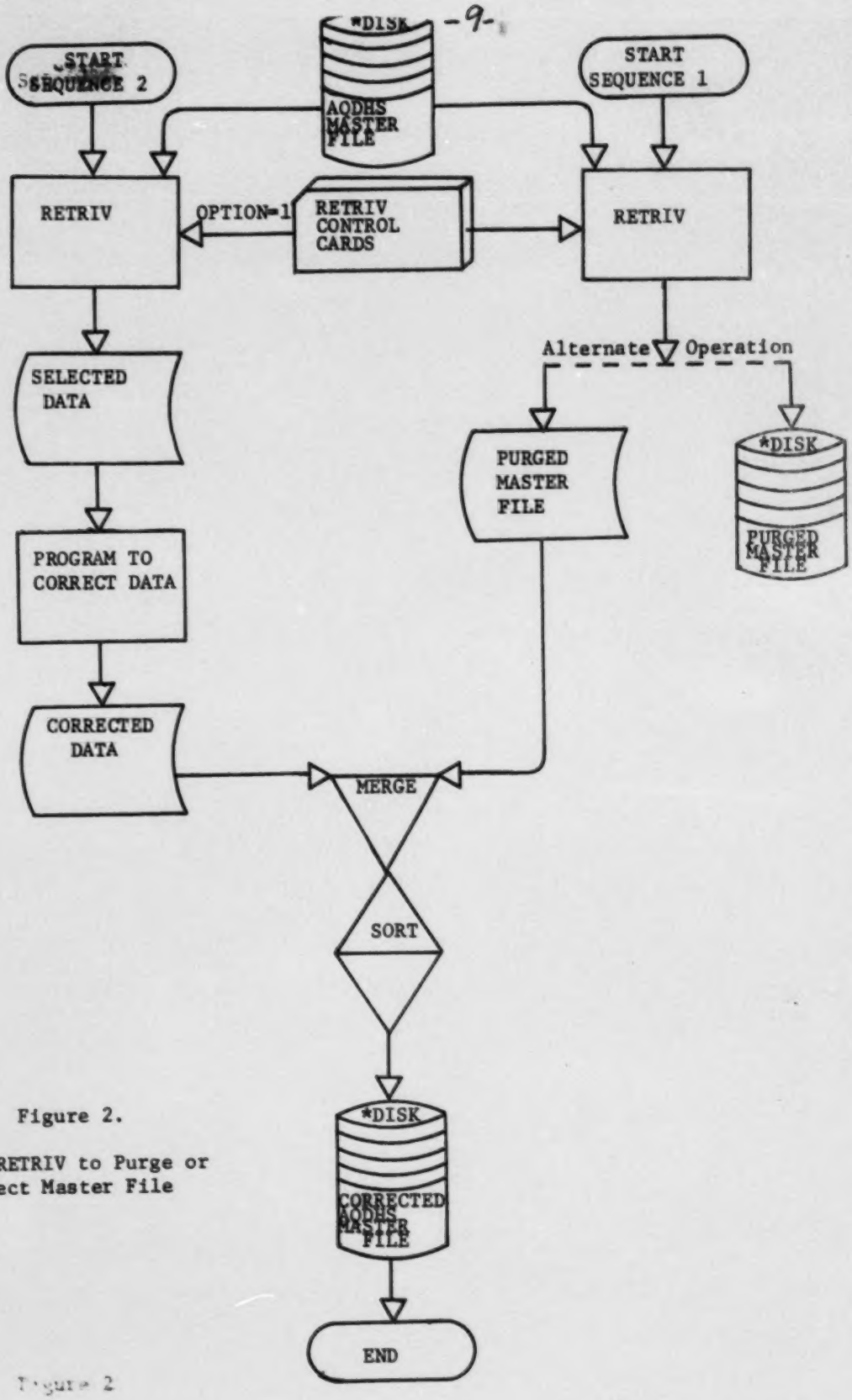


Figure 2.

Use of RETRIV to Purge or Correct Master File

APPENDIX A

FORTRAN UNIT DESIGNATIONS FOR RETRIV PROGRAM

UNIT	TYPE	COMMENT
FT02F001	OUT	NADB input program control cards
FT03F001	OUT	STATNL control card
FT04F001	OUT	REPORT control cards
FT05F001	IN	RETRIV control cards
FT06F001	OUT	RETRIV printer unit (SYSOUT = A)
FT07F001	OUT	Temporary AQDHS master file passed to other programs
FT08F001	IN	AQDHS MASTER FILE

APPENDIX B

IBM CATALOGUED PROCEDURE

USING

RETRIV

```
 'SYS1.TEST.PROCLIB(AQRETIV)'
00010 //*   AQRETIV WAS WRITTEN BY POLLUTION CONTROL SYSTEMS AND ANALYSIS,
00020 //*  S & A DIV,REGION IV, EPA,ATHENS , GA, 30601 FOR MORE INFORMATION
00030 //*  ON THIS PROC, CONTACT T. O. BARNWELL AT (404) 546-3139
00040 //PROCD PROC SIZE=100K,T=2,PRINT=A
00050 //GO EXEC PGM=RETRIV,REGION=&SIZE,TIME=&T
00060 //STEPLIB DD DISP=SHR,UNIT=3330,VOL=SER=BCS012,DSN=EPA.R4.BARNWELL.AIR
00070 //FT02F001 DD DSN=&NADB,DISP=(NEW,PASS),SPACE=(80,(1,1)),
00080 //    DCB=BLKSIZE=80,UNIT=SYSDA
00090 //FT03F001 DD DSN=&STAT,DISP=(NEW,PASS),SPACE=(80,(1,1)),
00100 //    DCB=BLKSIZE=80,UNIT=SYSDA
00110 //FT04F001 DD DSN=&REPT,DISP=(NEW,PASS),SPACE=(80,(25,10)),
00120 //    DCB=BLKSIZE=80,UNIT=SYSDA
00130 //FT06F001 DD SYSOUT=A
00140 //FT08F001 DD DISP=SHR,DSN=EPA.R4.BARNWELL.AQDHSF,UNIT=3330,
00150 //     VOL=SER=BCS012,DCB=(RECFM=FB,LRECL=160,BLKSIZE=1600)
00160 //FT07F001 DD DISP=(,PASS),UNIT=SYSDA,DCB=*.FT08F001,SPACE=(TRK,(5,5))
00170 //FT05F001 DD DDNAME=SYSIN
00180 //S2 EXEC PGM=STATNL,COND=((2,GT,GO),(3,LT,GO)),REGION=&SIZE,TIME=&T
00190 //STEPLIB DD DISP=SHR,UNIT=3330,VOL=SER=BCS012,DSN=EPA.R4.BARNWELL.AIR
00200 //FT08F001 DD DSN=*.GO.FT07F001,DISP=(OLD,PASS)
00210 //FT06F001 DD SYSOUT=&PRINT
00220 //FT05F001 DD DSN=&STAT,DISP=(OLD,DELETE)
00230 //S3 EXEC PGM=REPORTDH,COND=((3,GT,GO),(5,LT,GO)),REGION=&SIZE,TIME=&T
00240 //STEPLIB DD DISP=SHR,UNIT=3330,VOL=SER=BCS012,DSN=EPA.R4.BARNWELL.AIR
00250 //INPFIL DD DSN=*.GO.FT07F001,DISP=(OLD,PASS)
00260 //PRTFIL DD SYSOUT=&PRINT
00270 //HDRFIL DD DSN=&REPT,DISP=(OLD,DELETE)
00280 //S4 EXEC PGM=NADBIN,COND=((5,GT,GO),(6,LT,GO)),REGION=&SIZE,TIME=&T
00290 //STEPLIB DD DISP=SHR,UNIT=3330,VOL=SER=BCS012,DSN=EPA.R4.BARNWELL.AIR
00300 //DD1 DD DSN=*.GO.FT07F001,DISP=(OLD,PASS)
00310 //DD7 DD SYSOUT=&PRINT
00320 //DD8 DD SYSOUT=B
00330 //DD2 DD DSN=&NADB,DISP=(OLD,DELETE)
READY
```

APPENDIX C

PROGRAM LISTING

```
      C     PROGRAM RETRIV.
      C
      C     WRITTEN BY:
      C     THOMAS O BARNWELL,JR
      C     SANITARY ENGINEER
      C     POLLUTION CONTROL SYSTEMS AND ANALYSIS
      C     S & A DIVISION,REGION IV, EPA
      C     COLLEGE STATION ROAD
      C     ATHENS, GA, 30601
      C
      C     PROGRAM RETRIVES DATA FROM AIR QUALITY DATA HANDLING SYSTEM MASTER FILE
      C     AND PREPARES RETRIVAL CONTROL CARDS FOR OTHER AQDHS PROGRAMS.
      C     DATE WRITTEN - 17 OCT 72       DATE REVISED - 17 OCT 72
      C
      C     VARIABLES ARE FIRST TWO LETTERS OF NAME.
      C     LOGICAL VARIABLES ARE FIRST TWO LETTERS PRECEEDED BY "T".
      C     NUMBER OF TESTS FOR VARIABLE IS FIRST TWO LETTERS PRECEEDED BY "N"
      C
      C     TYPE ALL VARIABLES AS INTEGER*4
0001          IMPLICIT INTEGER*4  (A-Z)
      C     TYPE AND INITIALIZE LOGICAL VARIABLES
0002          LOGICAL TAG/.TRUE./,TPR/.TRUE./,TST/.TRUE./,TAR/.TRUE./,
     1TSI/.TRUE./,TPA/.TRUE./,TTI/.TRUE./
0003          LOGICAL TSTAR/.TRUE./
      C     DIMENSION ARRAYS
0004          DIMENSION AGENCY(26),PROJ(10),STATE(8),AREA(50),SITE(50),PARAM(11)
     1,METHOD(10),TIME(9),VAL(31)
0005          DIMENSION A(160),B(80),NAME(80),STAR(102)
      C     INITIALIZE VARIABLES AND ARRAYS
0006          DATA AGENCY/26*1H /,PROJ/10*0/ ,STATE/8*0/,AREA/50*0/,SITE/50*0/,
     1PARAM/11*0/,METHOD/10*0/,TIME/9*0/,BLANK/'    '/,OPTION/1/,
     2BD/100000/,ED/999999/,NAG/0/,NPR/0/,NST/0/,NAR/0/,NSI/0/,NPA/0/,
     3NTI/0/,COUNT/0/,PRINT/0/
0007          DATA B/24*1H9,56*1H /,NAME/80*1H /,STAR/102*0/,NSTAR/0/,PGM/1/
      C     NAMELIST VARIABLES
0008          NAMELIST /INDATA/OPTION,AGENCY,PROJ,STATE,AREA,SITE,PARAM,METHOD,
     1TIME,BD,ED,STAR,PGM,PRINT
      C     READ NAMELIST
0009          READ(5,INDATA)
      C     READ TITLE CARD
0010          READ (5,100,END=101) (NAME(I),I=1,80)
0011        100 FORMAT(80A1)
0012        101 CONTINUE
      C     B ARRAY WILL CONTAIN REPORT CONTROL CARDS. PLACE TITLE IN COLS. 41-80
0013          DO 102 I=41,80
0014          B(I)=NAME(I)
0015        102 CONTINUE
      C  WRITE STATNL CONTROL CARD
0016          WRITE(3,104) BD,ED,(NAME(I),I=41,80)
0017        104 FORMAT(T23,I6,I6,T41,40A1)
      C     WRITE NADBIN CONTROL CARD
0018          WRITE (2,105) BD,ED
```

```
0019          105 FORMAT(I6,I6)
            C     DETERMINE WHICH VARIABLES ARE TO BE TESTED
0020                IF (AGENCY(1).NE.BLANK) TAG=.FALSE.
0021                IF (PROJ(1).NE.0) TPR=.FALSE.
0022                IF (STATE(1).NE.0) TST=.FALSE.
0023                IF (AREA(1).NE.0) TAR=.FALSE.
0024                IF (STAR(1).NE.0) TSTAR=.FALSE.
0025                IF (SITE(1).NE.0) TSI=.FALSE.
0026                IF(PARAM(1).NE.0) TPA=.FALSE.
0027                IF (TIME(1).NE.0) TTI=.FALSE.
0028                IF (TAG) GO TO 203
            C     DETERMINE NUMBER OF TESTS ON EACH VARIABLE
0029                DO 201 I=1,26
0030                IF (AGENCY (I).EQ.BLANK) GO TO 202
0031           201 CONTINUE
0032           202 NAG=I-1
0033           203 IF (TPR) GO TO 206
0034                DO 204 I=1,10
0035                IF (PROJ(I).EQ.0) GO TO 205
0036           204 CONTINUE
0037           205 NPR=I-1
0038           206 IF (TST) GO TO 209
0039                DO 207 I=1,8
0040                IF (STATE(I).EQ.0) GO TO 208
0041           207 CONTINUE
0042           208 NST=I-1
0043           209 IF (TAR) GO TO 212
0044                DO 210 I=1,50
0045                IF (AREA(I).EQ.0) GO TO 211
0046           210 CONTINUE
0047           211 NAR=I-1
0048           212 CONTINUE
0049                IF (TSTAR) GO TO 2120
0050                DO 2121 I=1,102,2
0051                IF (STAR(I).EQ.0) GO TO 2122
0052          2121 CONTINUE
0053          2122 NSTAR=I-2
0054          2120 CONTINUE
0055                IF (TSI) GO TO 215
0056                DO 213 I=1,50
0057                IF (SITE(I).EQ.0) GO TO 214
0058           213 CONTINUE
0059           214 NSI=I-1
0060           215 IF (TPA) GO TO 218
0061                DO 216 I=1,11
0062                IF (PARAM(I).EQ.0) GO TO 217
0063           216 CONTINUE
0064           217 NPA=I-1
0065           218 IF (TTI) GO TO 221
0066                DO 219 I=1,9
0067                IF (TIME(I).EQ.0) GO TO 220
0068           219 CONTINUE
```

```
0069          220 NTI=I-1
0070          221 CONTINUE
            C     WRITE SUMMARY OF RETRIVAL OPTIONS SELECTED
0071              WRITE(6,350)
0072          350 FORMAT(1H1,42H SUMMARY OF RETRIVAL OPTIONS FOR THIS JOB ,
                 1/,42H ------------------------------------------)
0073              GO TO (3501,3502,3503,3504,3505,3506),PGM
0074         3501 WRITE (6,3511)
0075         3511 FORMAT(//,19H PGM = RETRIV ONLY )
0076              GO TO 3510
0077         3502 WRITE(6,3512)
0078         3512 FORMAT(//,14H PGM = STATNL )
0079              GO TO 3510
0080         3503 WRITE(6,3513)
0081         3513 FORMAT(//,25H PGM = STATNL AND REPORT )
0082              GO TO 3510
0083         3504 WRITE(6,3514)
0084         3514 FORMAT(//,14H PGM = REPORT )
0085              GO TO 3510
0086         3505 WRITE(6,3515)
0087         3515 FORMAT(//,25H PGM = REPORT AND NADBIN )
0088              GO TO 3510
0089         3506 WRITE(6,3516)
0090         3516 FORMAT(//,14H PGM = NADBIN )
0091         3510 CONTINUE
0092              IF (OPTION.EQ.1) GO TO 301
0093              WRITE(6,351) OPTION
0094          351 FORMAT(//,10H OPTION = ,I2,8H (PURGE))
0095              GO TO 302
0096          301 WRITE (6,352) OPTION
0097          352 FORMAT(//,10H OPTION = ,I2,11H (RETRIEVE))
0098          302 IF (TAG) GO TO 303
0099              WRITE(6,353) (AGENCY(I),I=1,NAG)
0100          353 FORMAT(//,10H AGENCY = ,13(A1,1H,,1X),/,10X,13(A1,1H,,1X))
0101              GO TO 304
0102          303 WRITE(6,354)
0103          354 FORMAT(//,14H AGENCY = ALL )
0104          304 IF (TPR) GO TO 305
0105              WRITE(6,356) (PROJ(I),I=1,NPR)
0106          356 FORMAT(//,11H PROJECT = ,10(I2,1H,,1X))
0107              GO TO 306
0108          305 WRITE(6,355)
0109          355 FORMAT(//,15H PROJECT = ALL )
0110          306 IF (TST) GO TO 307
0111              WRITE(6,357) (STATE(I),I=1,NST)
0112          357 FORMAT(//, 9H STATE = ,9(I2,1H,,1X))
0113              GO TO 308
0114          307 WRITE(6,358)
0115          358 FORMAT(//,13H STATE = ALL )
0116          308 IF (TAR) GO TO 309
0117              WRITE(6,359) (AREA(I),I=1,NAR)
0118          359 FORMAT(//, 8H AREA = ,8(8(I4,1H,),/,8X))
```

```
0119            GO TO 310
0120          309 WRITE(6,360)
0121          360 FORMAT(//,12H AREA = ALL )
0122          310 CONTINUE
0123            IF (TSTAR) GO TO 3102
0124            WRITE(6,3150)
0125         3150 FORMAT(//,24H STATE AREA COMBINATIONS,
                1       /,12H ----- ---- )
0126            DO 3101 I=1,NSTAR,2
0127            WRITE(6,3151) STAR(I),STAR(I+1)
0128         3151 FORMAT(1H ,2X,I2,2X,I4)
0129         3101 CONTINUE
0130            GO TO 3100
0131         3102 WRITE(6,3152)
0132         3152 FORMAT(//,38H NO STATE-AREA COMBINATIONS SPECIFIED )
0133         3100 CONTINUE
0134            IF (TSI) GO TO 311
0135            WRITE(6,361) (SITE(I),I=1,NSI)
0136          361 FORMAT(//, 8H SITE = ,5(10(I3,1H,),/,8X))
0137            GO TO 312
0138          311 WRITE(6,362)
0139          362 FORMAT(//,12H SITE = ALL )
0140          312 IF (TPA) GO TO 315
0141            WRITE(6,363)
0142          363 FORMAT(//,18H PARAMETER METHOD ,/,18H --------- ------ )
0143            DO 314 I=1,NPA
0144            IF (METHOD(I).EQ.0) GO TO 313
0145            WRITE(6,364) PARAM(I),METHOD(I)
0146          364 FORMAT(1H ,5X,I5,3X,I2)
0147            GO TO 375
0148          313 WRITE(6,365) PARAM(I)
0149          365 FORMAT(1H ,5X,I5,2X,3HALL)
0150          375 CONTINUE
0151          314 CONTINUE
0152            GO TO 316
0153          315 WRITE(6,366)
0154          366 FORMAT(//,19H PARAMETER = ALL      )
0155          316 IF (TTI) GO TO 317
0156            WRITE(6,367) (TIME(I),I=1,NTI)
0157          367 FORMAT(//, 8H TIME = ,10(1X,I1,1H,))
0158            GO TO 318
0159          317 WRITE(6,368)
0160          368 FORMAT(//,13H TIME = ALL    )
0161          318 WRITE (6,369) BD,ED
0162          369 FORMAT(//,       18H BEGINNING DATE = ,I6,7H YYMMDD,
                1       //,       18H ENDING DATE    = ,I6,7H YYMMDD )
              C     IF RECORD ID'S ARE DESIRED WRITE HEADING
0163            IF (PRINT.EQ.1) WRITE(6,920)
0164          920 FORMAT(52H1AGENCY PROJ STATE AREA SITE PARAM METHOD TIME DATE )
              C     READ MASTER FILE
0165          901 READ(8,801,END=9999) AG,PR,ST,AR,SI,PA,ME,UN,TI,MR,DATE,DE,
                1(VAL(I),I=1,31),DOM1
```

```
0166          801 FORMAT(2X,A1,2I2,I4,I3,I5,2I2,I1,I2,I6,I1,3II4,A2)
              C     BEGIN TESTS.  IF RECORD FAILS TO MEET CRITERIA GO TO 501
0167                IF (TAG) GO TO 402
0168                DO 401 I=1,NAG
0169                IF (AGENCY(I).EQ.AG) GO TO 402
0170            401 CONTINUE
0171                GO TO 501
0172            402 IF (TPR) GO TO 404
0173                DO 403 I=1,NPR
0174                IF (PROJ(I).EQ.PR) GO TO 404
0175            403 CONTINUE
0176                GO TO 501
0177            404 IF (TST) GO TO 406
0178                DO 405 I=1,NST
0179                IF (STATE(I).EQ.ST) GO TO 406
0180            405 CONTINUE
0181                GO TO 501
0182            406 IF (TAR) GO TO 408
0183                DO 407 I=1,NAR
0184                IF (AREA(I).EQ.AR) GO TO 408
0185            407 CONTINUE
0186                GO TO 501
0187            408 CONTINUE
0188                IF (TSTAR) GO TO 4080
0189                DO 4081 I=1,NSTAR,2
0190                IF ((STAR(I).EQ.ST).AND.(STAR(I+1).EQ.AR)) GO TO 4080
0191           4081 CONTINUE
0192                GO TO 501
0193           4080 CONTINUE
0194                IF (TSI) GO TO 410
0195                DO 409 I=1,NSI
0196                IF (SITE(I).EQ.SI) GO TO 410
0197            409 CONTINUE
0198                GO TO 501
0199            410 IF (TPA) GO TO 413
0200                DO 411 I=1,NPA
0201                IP=I
0202                IF (PARAM(I).EQ.PA) GO TO 412
0203            411 CONTINUE
0204                GO TO 501
0205            412 IF (METHOD(IP).EQ.0) GO TO 413
0206                IF (METHOD(IP).EQ.ME) GO TO 413
0207                GO TO 501
0208            413 IF (TTI) GO TO 415
0209                DO 414 I=1,NTI
0210                IF (TIME(I).EQ.TI) GO TO 415
0211            414 CONTINUE
0212                GO TO 501
0213            415 IF (DATE.LT.BD) GO TO 501
0214                IF (DATE.GT.ED) GO TO 501
              C     RECORDS REACHING THIS POINT HAVE SATISFIED RETRIVAL CRITERIA
              C     CHECK RETRIVE/PURGE OPTION.  IF NOT RETRIVE GO TO 901 AND GET NEW RECORD
```

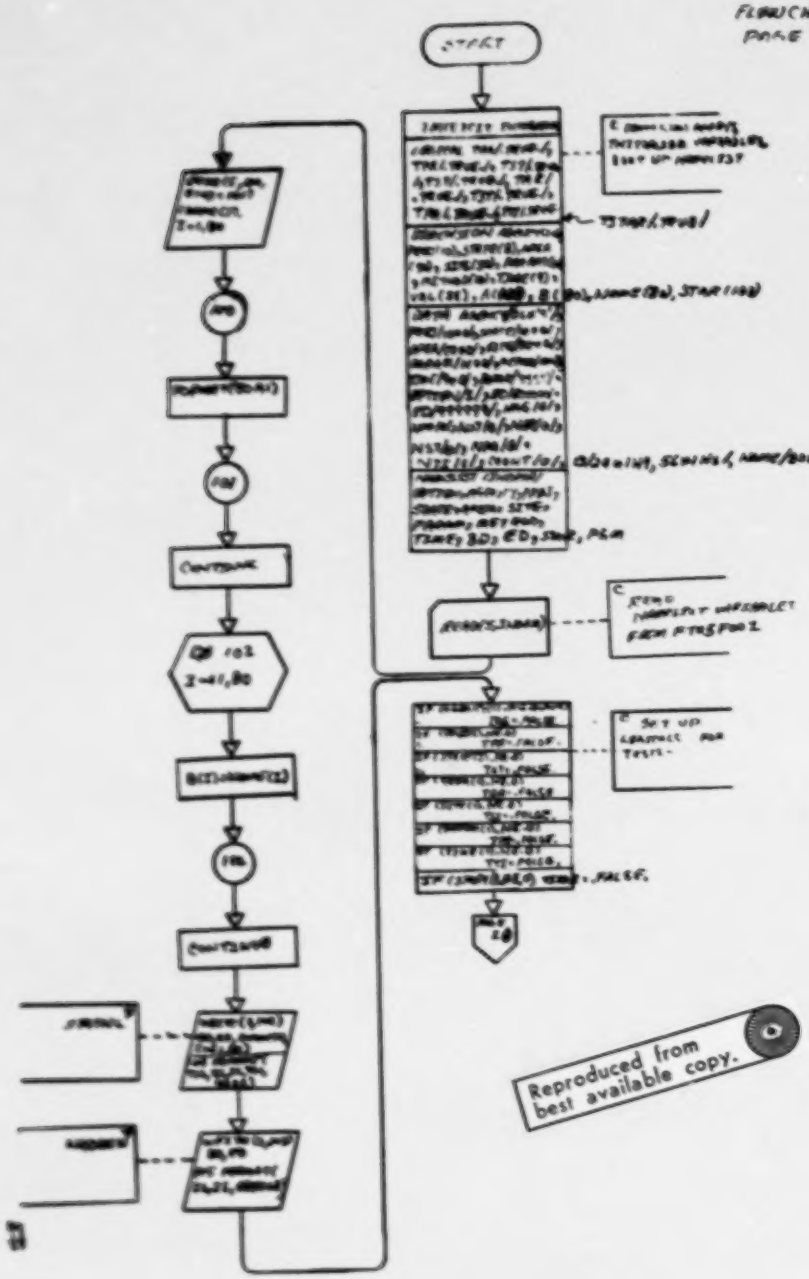
```
0215                IF (OPTION.NE.1) GO TO 901
0216                GO TO 510
                C   CHECK RETRIVE/PURGE OPTION.  IF NOT PURGE GO TO 901 AND GET A NEW RECORD
0217              501 IF (OPTION.NE.2) GO TO 901
                C   IF RECORD IS DESIRED BACKSPACE AND READ AS ALL CHARACTERS. THIS GETS
                C   ALL LEADING ZERO'S
0218              510 BACKSPACE 8
0219                READ (8,810) (A(I),I=1,160)
                C   WRITE DESIRED RECORDS ON UNIT 7
0220                WRITE (7,810) (A(I),I=1,160)
0221              810 FORMAT(160A1)
                C   IF RECORD ID'S ARE DESIRED WRITE OUT
0222                IF (PRINT.NE.1) GO TO 905
0223                WRITE (6,903) AG,PR,ST,AR,SI,PA,ME,TI,DATE
0224              903 FORMAT(1H ,2X,A1,5X,I2,4X,I2,2X,I4,2X,I2,2X,I5,3X,I2,5X,I1,2X,I6)
0225              905 CONTINUE
                C   COUNT NUMBER OF RECORDS WRITTEN ON TEMPORARY MASTER
0226                COUNT=COUNT+1
                C   COMPARE LAST RECORD WITH PRESENT RECORD--IF -= WRITE A NEW REPORT CONTROL
                C   CARD
0227                IF ((A(24).EQ.B(1)).AND.(A(3).EQ.B(2)).AND.(A(4).EQ.B(3)).AND.
                   1(A(5).EQ.B(4)).AND.(A(6).EQ.B(5)).AND.(A(7).EQ.B(6)).AND.
                   2(A(8).EQ.B(7)).AND.(A(9).EQ.B(8)).AND.(A(10).EQ.B(9)).AND.
                   3(A(11).EQ.B(10)).AND.(A(12).EQ.B(11)).AND.(A(13).EQ.B(12)).AND.
                   4(A(14).EQ.B(13)).AND.(A(15).EQ.B(14)).AND.(A(16).EQ.B(15)).AND.
                   5(A(17).EQ.B(16)).AND.(A(18).EQ.B(17)).AND.(A(19).EQ.B(18)).AND.
                   6(A(20).EQ.B(19)).AND.(A(21).EQ.B(20)))  GO TO 901
0228                B(1)=A(24)
0229                B(2)=A(3)
0230                B(3)=A(4)
0231                B(4)=A(5)
0232                B(5)=A(6)
0233                B(6)=A(7)
0234                B(7)=A(8)
0235                B(8)=A(9)
0236                B(9)=A(10)
0237                B(10)=A(11)
0238                B(11)=A(12)
0239                B(12)=A(13)
0240                B(13)=A(14)
0241                B(14)=A(15)
0242                B(15)=A(16)
0243                B(16)=A(17)
0244                B(17)=A(18)
0245                B(18)=A(19)
0246                B(19)=A(20)
0247                B(20)=A(21)
0248                WRITE(4,972) (B(I),I=1,80)
0249              972 FORMAT(80A1)
0250                GO TO 901
                C   PROGRAM REACHES THIS POINT WHEN END OF MASTER IS ENCOUNTERED
                C   WRITE RECORD COUNT
```

```
0251          9999 WRITE(6,902) COUNT
0252           902 FORMAT(///,I10,'  RECORDS RETRIEVED')
0253               END FILE 7
              C    PASS CONDITION CODES
0254               GO TO (701,702,703,704,705,706),PGM
0255           701 STOP 1
0256           702 STOP 2
0257           703 STOP 3
0258           704 STOP 4
0259           705 STOP 5
0260           706 STOP 6
0261               END
```

APPENDIX D

PROGRAM FLOWCHART

FLOWCHART
PAGE 1



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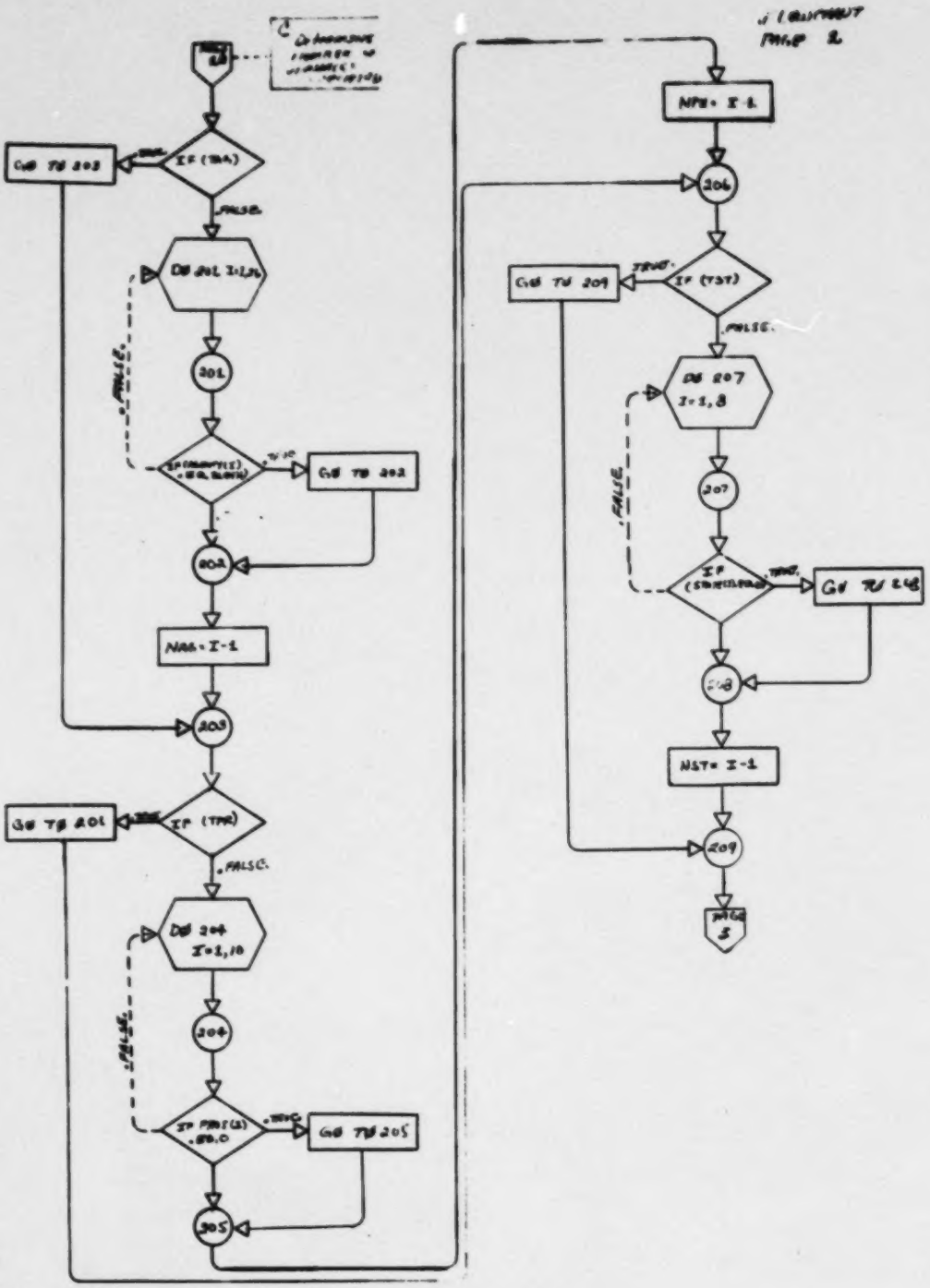
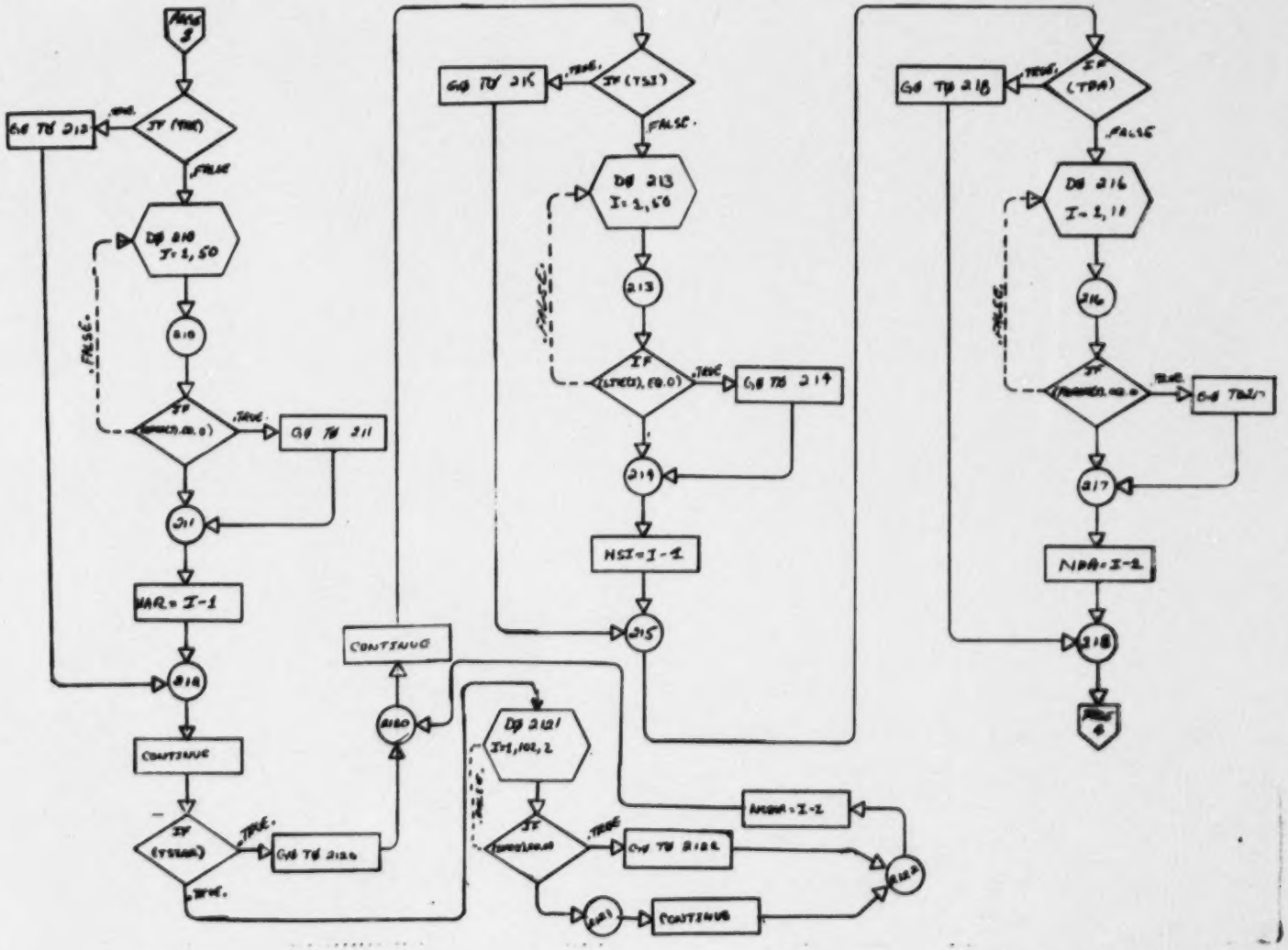
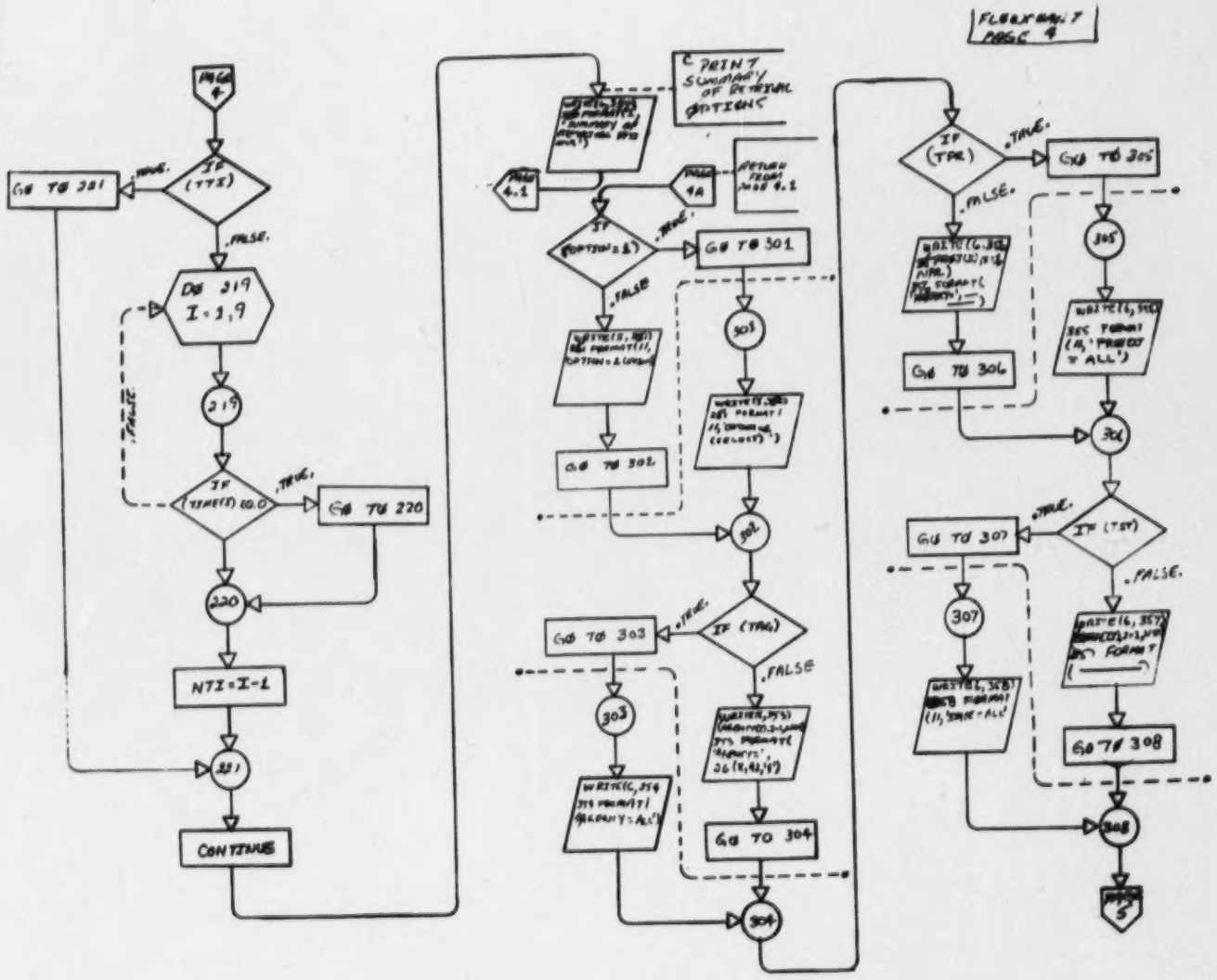

IF (TRA)
GO TO 203
TRUE
FALSE
DO 201 I=1,26
201
IF (TRANSMIT(I) .EQ. BLANK)
TRUE
GO TO 202
202
NRA = I-1
203
IF (TPR)
GO TO 201
TRUE
FALSE
DO 204 I=1,10
204
IF PRI(I) .EQ. 0
TRUE
GO TO 205
205
NPR = I-1
206
IF (TST)
GO TO 209
TRUE
FALSE
DO 207 I=1,8
207
IF (STATUS(I) .EQ. BLANK)
TRUE
GO TO 208
208
NST = I-1
209
PAGE 3

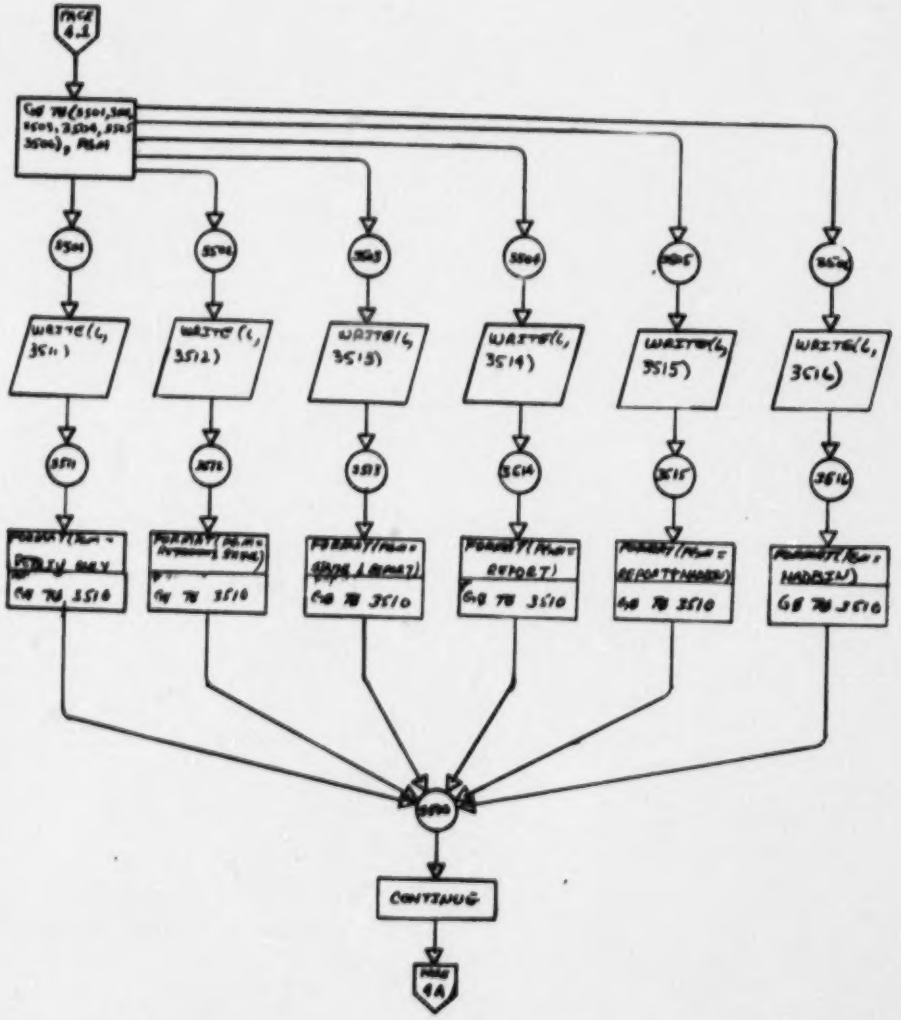
FLOW CHART
PAGE 3

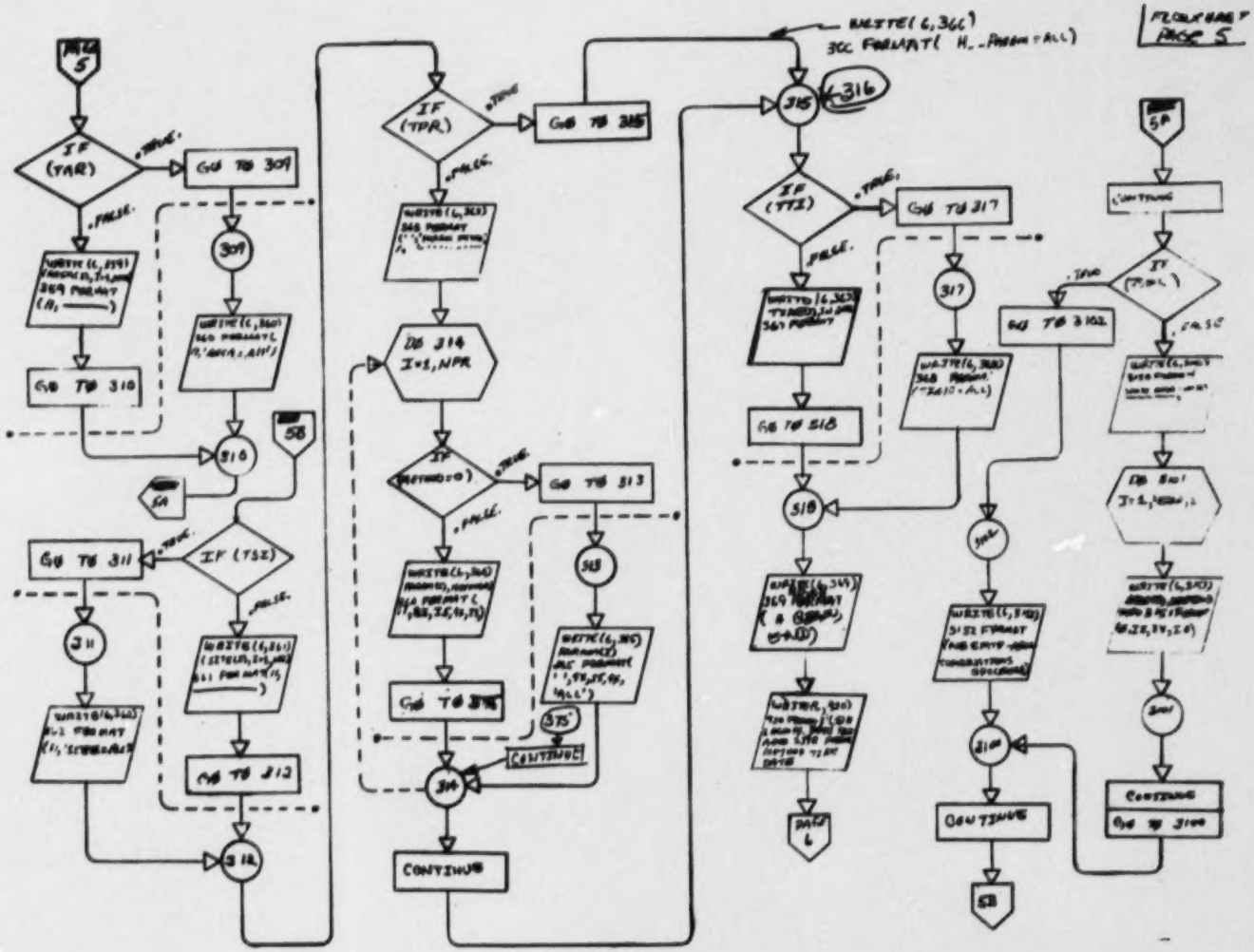


-24-


PAGE 4
IF (TTI)
.TRUE.
GO TO 221
.FALSE.
DO 319 I=1,9
319
IF (TIME(I) EQ.0.0
.TRUE.
GO TO 220
.FALSE.
220
NTI=I-1
221
CONTINUE
C PRINT SUMMARY OF TRIAL OPTIONS
PAGE 4.1
PAGE 4A
RETURN FROM PAGE 4.1
IF (OPTION=2)
.TRUE.
GO TO 301
.FALSE.
303
302
GO TO 302
IF (TAG)
.TRUE.
GO TO 303
.FALSE
303
304
GO TO 304
FLOWCHART PAGE 4
IF (TAG)
.TRUE.
GO TO 305
.FALSE.
GO TO 306
305
306
307
IF (TAG)
.TRUE.
GO TO 307
.FALSE.
GO TO 308
307
308
PAGE 5

FLOWCHART
PAGE 4.1




FLOWCHART PAGE 5
IF (TAR)
GO TO 309
IF (TPR)
GO TO 315
IF (TTI)
GO TO 317
IF (TSZ)
CONTINUE
GO TO 312
GO TO 310
GO TO 311
GO TO 313
GO TO 318
GO TO 3102
CONTINUE
GO TO 3100
CONTINUE

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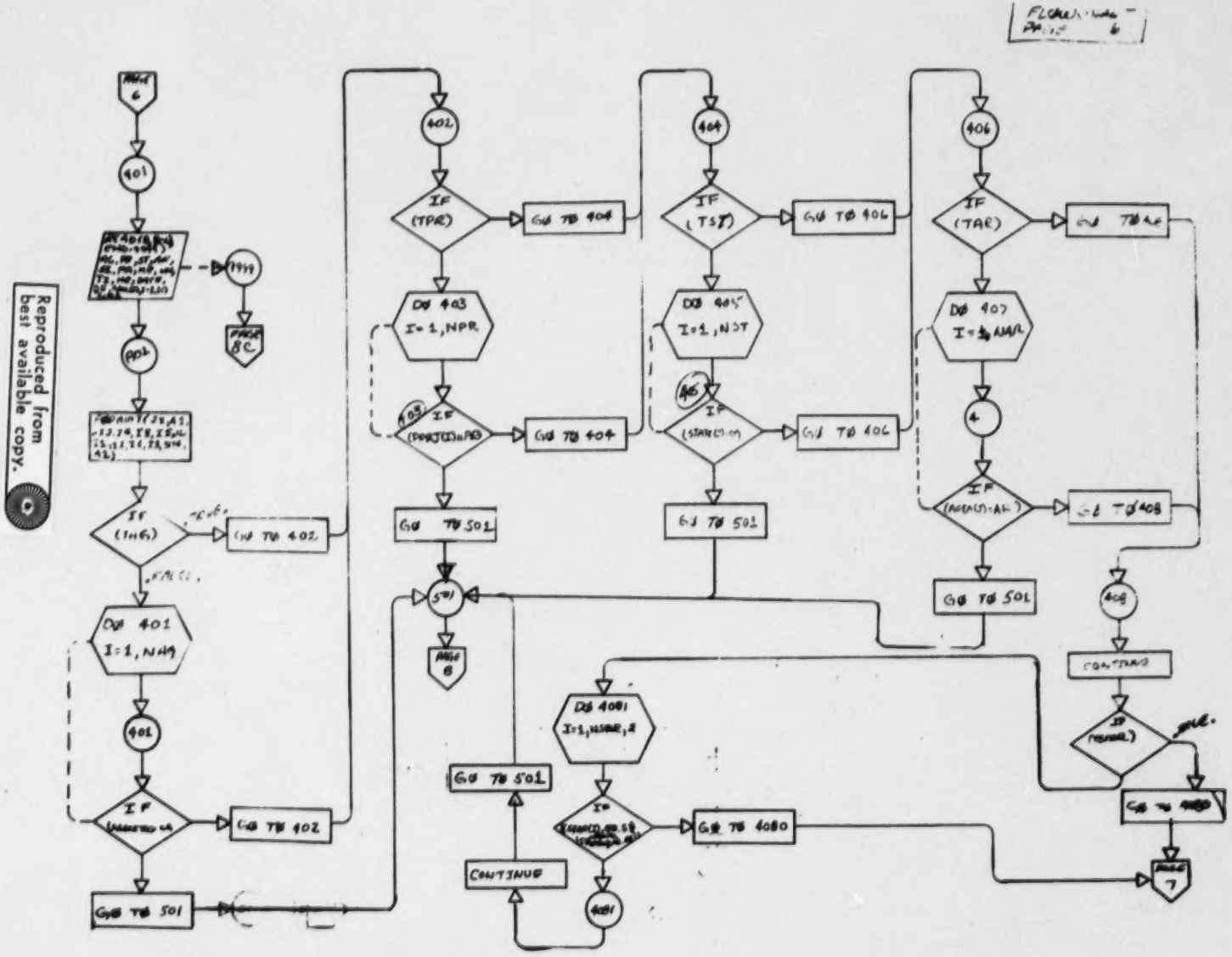

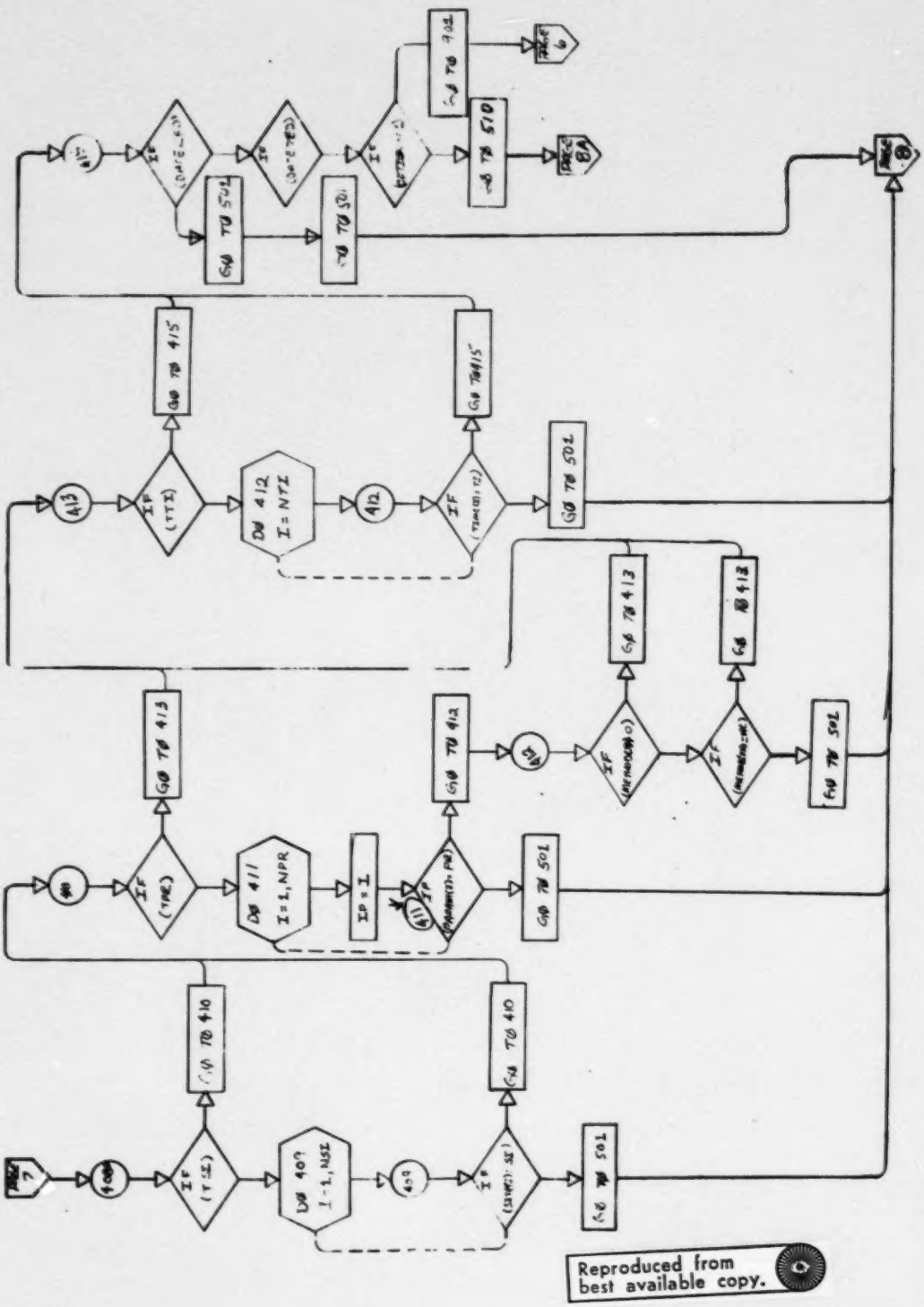

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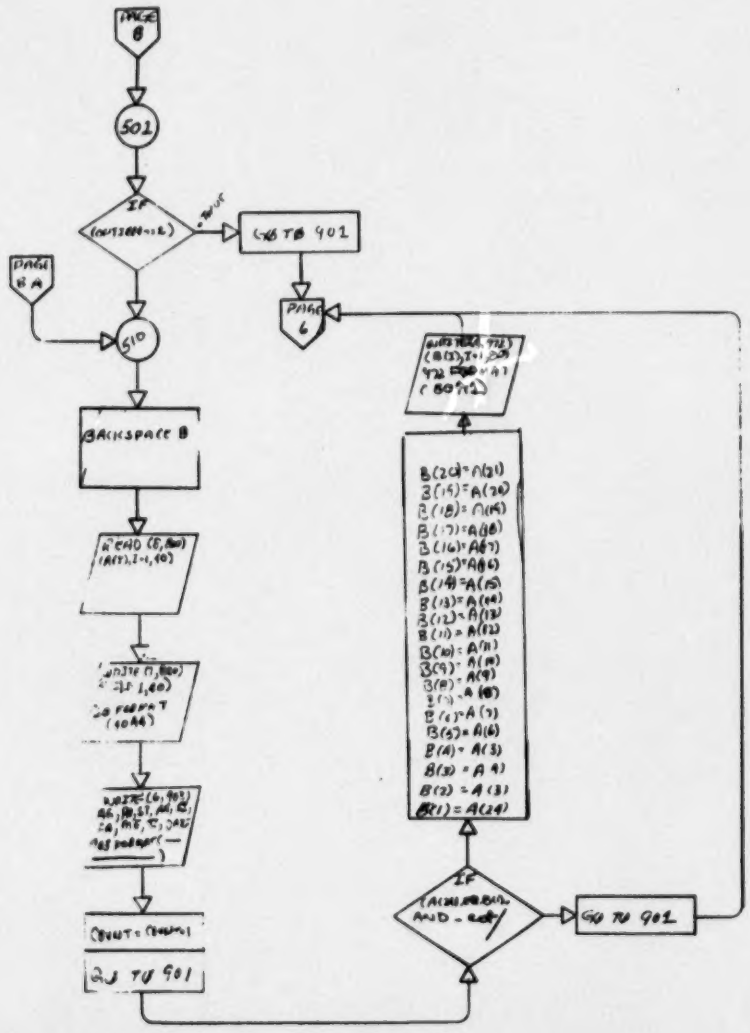
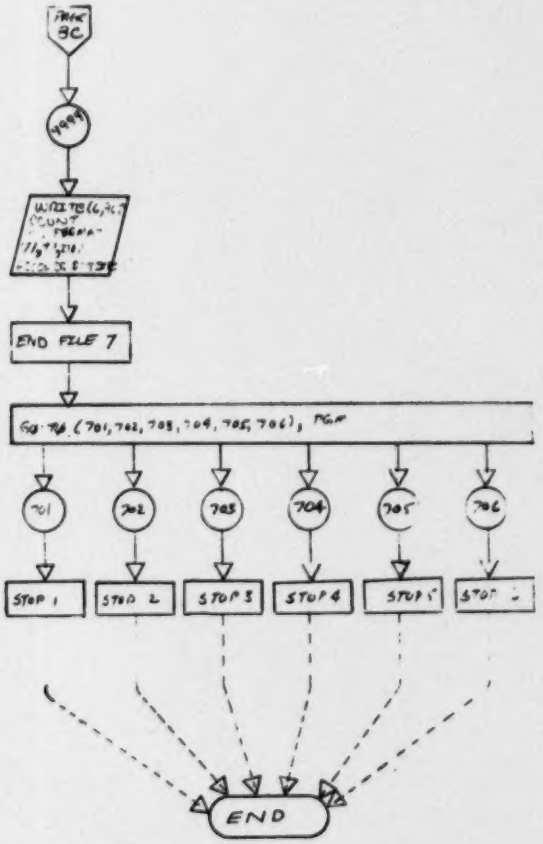

PAGE 8
501
IF
GO TO 901
PAGE 8 A
510
BACKSPACE 8
READ (8,800)
(A(I),I=1,40)
WRITE (6,900)
GO TO FORMAT
(40A1)
WRITE (6,902)
COUNT = COUNT+1
GO TO 901
PAGE 6
WRITE (6,902)
(B(I),I=1,40)
FORMAT
(80A1)
B(20)=A(21)
B(19)=A(20)
B(18)=A(19)
B(17)=A(18)
B(16)=A(17)
B(15)=A(16)
B(14)=A(15)
B(13)=A(14)
B(12)=A(13)
B(11)=A(12)
B(10)=A(11)
B(9)=A(10)
B(8)=A(9)
B(7)=A(8)
B(6)=A(7)
B(5)=A(6)
B(4)=A(5)
B(3)=A(4)
B(2)=A(3)
B(1)=A(2)
IF
AND
GO TO 901


PAGE 8C
END FILE 7
GO TO (701,702,703,704,705,706), IGO
701
702
703
704
705
706
STOP 1
STOP 2
STOP 3
STOP 4
STOP 5
END